THE ENDURING LOCAL BOTTLENECK II:
A PRELIMINARY ASSESSMENT

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THE ENDURING LOCAL BOTTLENECK II: A PRELIMINARY ASSESSMENT

In February of 1994, Economics and Technology, Inc. and Hatfield Associates, Inc. released The Enduring Local Bottleneck ("ELB"). ELB provided a comprehensive technical, economic and policy examination of the state of local exchange competition at that time, as well as an assessment of the potential for increased competition in the next five to ten years. The principal policy conclusion of ELB was that the proper sequencing of pro-competitive and deregulatory polices was essential to the development of viable local competition.

This policy conclusion was based on the finding that, as of the beginning of 1994, the popular perception that effective local competition had arrived, or was "just around the corner," was false. Instead, the study found that while economics and technology may make local competition viable under the right set of conditions, the process of eliminating local telephone company market power would be difficult and time consuming. In the meantime, the incumbent monopoly local telephone companies could continue to exercise substantial market power.

One of the major objectives of the ELB was to conduct an engineering-economic analysis of various potential local competitive technologies. This engineering-economic analysis was the foundation for a business case analysis that demonstrated it would take five to eight years for competitive local telephone providers to generate a positive cash flow, and eleven to fifteen years to reach break-even. Thus, ELB found that investments in alternative local exchange networks

are quite risky.[1] Premature abandonment of competitive safeguards would obviously contribute to that risk, and delay or even prevent local exchange competition from developing.

Almost two years have passed since the release of ELB. Many of the predictions that the telephone companies relied upon in 1994 to argue that fully competitive local exchange markets were just around the corner have since been proven wrong. But there is no question that technology and markets continue to develop. The real question is whether these changes support continuing claims by the local telephone companies that competitive markets are still "just around the corner."

In light of rapidly changing technology, MCI Communications Corporation, one of the original sponsors of ELB, has retained Hatfield Associates, Inc. to update the engineering-economic analysis in ELB. Since the release of ELB, HAI has been extensively involved in modeling local network costs, considering both the networks of incumbent LECs and potential networks based on the new technologies discussed in the ELB report.[2] The data and experience gathered in the process of this modeling can be usefully applied to update and refine the ELB results. The modeling effort is currently underway. In the meantime, this preliminary report

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[1] The Regional Bell Operating Companies ("RBOCs") asserted that the ELB Report found that local competition is impossible. See, Peter Huber, The Enduring Myth of the Local Bottleneck, March 14, 1994. Even a cursory review of ELB shows that it reaches no such conclusion. ELB found that competition is viable, but that competitors face substantial risk.

[2] See, "Testimony of Robert A. Mercer on Behalf of AT&T Communications of Illinois," Illinois Commerce Commission, Docket No. 94-0048, August 8, 1994; and Hatfield Associates, Inc., The Cost of Basic Universal Service, July 1994. The HAI Universal Service Model pertaining to incumbent LEC networks has subsequently been submitted in state regulatory proceedings in Colorado, Maryland, New York, Pennsylvania, Utah and Washington.

addresses various qualitative aspects of the technology and business assessment done in the earlier report.

The conclusion reached is that the overall findings in the earlier report appear to be equally valid now. In fact, some developments since the earlier report further buttress the conclusion that investments in local exchange networks are quite risky. These developments are reflected in an apparent cable industry pullback from full-scale telephony deployment and in wireless operator decisions to deploy technology that is not consistent with provision of local service to fixed locations (often referred to as providing "wireless loops").

Section I of this paper addresses previous local telephone company claims about local telephone technology and competition. This section shows that for the telephone companies, the "sky has been falling" since 1984. In light of the track record, dire predictions from this quarter must be discounted.

Section II assesses actual competition in the local exchange market place. The degree of local competition is still trivial, as demonstrated by an analysis of structure, conduct and performance in the market. Section III assesses changes in competitive technology since 1994, and shows how these changes are likely to affect the ongoing quantitative analysis.

Section IV describes the potential for dramatic price and cost reductions by monopoly local exchange carriers. Local competitors are not shooting at a stationary target. Many of the same technologies that are making local competition feasible can also be implemented by telephone companies to increase efficiencies and reduce costs. Thus, would-be competitors will not maintain an advantage due to their use of more advanced technology, as LECs sometimes maintain. The implication is that entry will be more difficult even while local telephone

companies continue to charge prices that exceed economic costs because technical progress is not guaranteed to reduce market concentration (and may, when examined in light of other factors, reinforce existing dominance).

The large gap between current prices and economic costs provides telephone companies with the power to engage in powerful price discrimination aimed at reducing or eliminating local exchange competition.[3] If efficient competitors are to be allowed a fair market test of their viability, regulation will be required.[4]

Section V discusses the impact such price reductions and other developments may have on the business case analysis presented in ELB. Section VI summarizes the paper.

I. TELEPHONE COMPANY MYTHS AND MYTHTAKEN PREDICTIONS

Telecommunications market and technology forecasting is an inherently risky business. However, as demonstrated below, the forecasting track record of the local telephone companies is singularly poor. The problem lies in telephone company use of newspaper articles instead of actual empirical data as a basis of the forecasts they provide policymakers.

Examples of the problem with using newspaper headlines as a substitute for hard empirical data can be found in abundance in pleadings and statements filed in this proceeding. For example, in its Comments filed December 11, 1995, Bell Atlantic attaches a previously

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[3] See, B. Douglas Bernheim, An Analysis of the FCC's Proposal for Streamlined Regulation of LEC Access Services, December 5, 1995, p. 19 (filed with AT&T Comments in this proceeding).

[4] This analysis also demonstrates that the Gilbert and Harris analysis of railroad regulation is irrelevant. Telephone companies are not prohibited from resorting to new technology, as the railroads were. See, "Affidavit of Richard J. Gilbert and Robert G. Harris," submitted with Comments of Bell Atlantic.

submitted June, 1994, Affidavit by Alfred Kahn. Dr. Kahn's statement merits quoting at length because it succinctly encapsulates local telephone predictions concerning the imminent onset of effective competition:

> The telecommunications industry is undergoing rapid, fundamental transformation, a transformation extending to what has until recently been the very core of franchised monopoly, the local exchange network and local service. The imminence of ubiquitous competitive challenges to the LECs from cable television companies is the most recent and perhaps most dramatic development: by 1992 their coaxial cable already passed some 93 percent of all American households and their subscribers constituted about 58 percent; and they are clearly planning, often in collaboration with others, to convert their systems to offer two-way switched services. The most striking of these alliances have been with out-of-territory telephone companies--US West's investment in Time Warner, Southwestern Bell's acquisition of the cable properties of Hauser and Bell Canada's investment in Jones Intercable--with the LECs combining their capital and expertise with the facilities of the cable companies directly to challenge the incumbent local telephone companies. Early fruitions of these developments are the recent announcements by the Southwestern Bell cable system in Montgomery County, Maryland, that it will provide ubiquitous local telephone service in competition with Bell Atlantic and by Time Warner that it will offer local telephone service in Rochester, New York, in direct competition with Rochester Telephone. Almost simultaneously, MFS, one of the largest CAPs, which already has authority to provide local service in Maryland and New York State, announced that it would do so also in Rochester. In addition, nonwireline cellular companies, using the radio spectrum, offer a means of access to a growing body of subscribers alternative to that of the LECs. Subscribers to cellular telephone accounted for 11.5 percent of all households in 1992 and are growing at some 46.5 percent a year. This trend explains AT&T's planned acquisitions of McCaw Cellular and MCI's $1.5 billion investment in Nextel, another wireless provider. Other potentially even more ubiquitous wireless offerings, such as personal communication services, are on the horizon.[5]

As discussed below in Section III.B.3, cable television progress in providing a telephony alternative has been slow. The Time Warner - US West marriage is, at best, on the rocks.

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[5] See, "Affidavit of Alfred E. Kahn," June 28, 1994, appended to December 11 Comments of Bell Atlantic, para. 4. Citations omitted.

Southwestern Bell appears to be scaling back in Maryland. AT&T is no longer soliciting local telephone customers in Rochester, while Time Warner is serving a single apartment building there. AT&T/ McCaw is not marketing cellular as a substitute for local service; MCI withdrew from the Nextel investment shortly after Dr. Kahn filed his statement, and as described below in Section III.B.2, PCS is not being provisioned as a local telephone substitute.

As part of their "sky is falling" argument, telephone companies and Dr. Kahn make much of public announcements by their potential competitors about the latters' pending entry into the local exchange marketplace. In fact, however, such plans are exactly that: plans. The accomplishment of those plans is an entirely different matter. For instance, during 1995, AT&T's plans to provide local telephone service were a hot topic in various publications.[6] But even to a company with the assets and staying power of AT&T, achieving any significant level of penetration will be a daunting task. AT&T estimates it will require an investment of some $29 billion to achieve a 20 percent penetration in the local exchange marketplace. By contrast, its annual investment in network modernization today is only about $2.5 billion.[7] A simple comparison of these two investment figures suggests that it would require AT&T more than ten years to achieve the projected level of penetration; even that penetration would hardly be sufficient to eliminate competitive safeguards on the incumbent local telephone companies.

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[6] See, for example, "Unshackled AT&T is Now Loco for Local Loop," Network World, October 30, 1995, p. 1.

[7] AT&T and CompTel ad hoc presentation to personnel of the Common Carrier Bureau on December 12, 1995.

Likewise, much was made around the time ELB was released about MCI's announced plans to enter the local exchange marketplace. While MCIMetro has achieved a degree of success in the traditional CAP business since that time, it has actually commited only a limited amount of investment dollars to local entry. It is offering switched service only in Baltimore.

Other examples of local telephone company exaggeration, obfuscation and hyperbole abound. Perhaps one of the most spectacular misforecasts is from Peter Huber's revision of the Geodesic Network. In that document, Mr. Huber confidently predicted that ". . .the delivery over cheap media of massive amounts of data to be sorted on the customer's premises will hold an increasing economic edge [over telephone networks] as processing costs continue to fall."[8] Today, products are emerging that completely reverse this paradigm: inexpensive, low-function terminals that are designed to exploit the information-processing and storage capabilities of the Internet.[9]

Mr. Huber, of course, was not alone in missing the significance of the Internet, but the inaccuracy of this particular prediction is paralleled by the inaccuracy of his predictions about the development of cable television and wireless communications as local telephone substitutes:

> To be sure, most small householders are still dependent on the single, established local exchange carrier, but even that residual core of the local exchange monopoly will not survive much longer. Cable-CAP-radio companies are now poised to offer house-to-house phone service in direct competition with local telcos.[10]

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[8] See, Peter W. Huber, Michael K. Kellog, and John Thorn, The Geodesic Network II: 1993 Report on Competition in the Telephone Industry, 1993, p. 5.36

[9] DEC and IBM have both announced plans to market such terminals.

[10] *Id.* p. 2.11 emphasis supplied.

The reality, almost three years after Huber wrote these words, is that cable, CAPS, and radio alternatives are not yet "poised" to compete. Indeed, as the analysis discussed in Section III shows, the prospects for some of these potential competitors are not as bright as they appeared in 1993.

Many other examples of wrecked cars on the information superhighway can be found. The lesson of this brief review of the recent history of local telephone predictions is that public policy cannot be made on the basis of newspaper headlines or anecdotes. Sound empirical evidence must be gathered and analyzed. The local telephone companies refuse to provide real data and evidence in proceedings such as this, preferring instead to engage in the sort of arm waving possible only when everything is up their sleeves.

II. CURRENT STRUCTURE, CONDUCT, AND PERFORMANCE IN THE LOCAL TELEPHONE MARKET

As discussed above, there is a widely held belief based primarily on reporting in the popular and business press, that competition in exchange telephone services provided by the local telephone companies is a flourishing reality, or soon will become so. Regulators have indeed been eliminating legal barriers to entry in several states. This liberalization is a necessary step, but it is insufficient to ensure the success of competition. In actual fact, the economic impact of such developments on traditional local exchange monopolies is small.[11]

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[11] ELB, p. 1.

It is useful to analyze existing local telephone competition by using the "structure, conduct and performance" paradigm of industrial organization.[12] In simple terms, that paradigm holds that a market with a small number of suppliers and high barriers to entry (structure) is likely to lead to non-competitive pricing behavior (conduct), which in turn leads to excessive profits (performance).[13] This paradigm serves as the basis for the Department of Justice Merger Guidelines.[14]

A. Structure

There are essentially, two types of regulated (monopoly) "exchange" services that are provided by local telephone companies: 1) "Local exchange service," which is the process of handling telephone calls and other communications that originate and terminate within a specified (local) geographic area; and 2) "Exchange access service," which is the process of providing connections between local telephone company customers and the networks of other carriers.[15]

1. Local Exchange Service

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[12] Scherer, F.M. and David Ross; Industrial Market Structure and Economic Performance, Third Edition, 1990, pp. 4-6.

[13] There are also additional structure, conduct and performance variables that might be relevant in any particular market power inquiry. See, Scherer and Ross, *Id*, p. 4. Also, recent advances in the economics of industrial organization recognize that structure can be influenced by incumbent firm conduct. See, Janusz A. Ordover and Garth Saloner, "Predation Monopolization, and Antitrust;" Handbook of Industrial Organization, Richard Schmalensee and Robert D. Willig, eds., 1989, pp. 537-596.

[14] U.S. Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines, April 1992.

[15] Bernheim, *supra*, note 3, discusses market definition issues.

Until 1995, local exchange service competition was prohibited in most states. Even now, after a number of states have at least endorsed the concept of competition in local exchange service, there is active local exchange service competition in only five states: Illinois, Maryland, Michigan, New York and Washington. In another six states, rules are in place to allow local exchange service competition, but competitive providers have either not yet been certified to provide local exchange service, or, for a variety of reasons, including regulatory opposition by incumbent local telephone companies, have not yet been able to initiate service.[16]

Even in those states where competitive local exchange service is active, it is on a trivial scale in comparison to the incumbent local telephone company's similar services. For instance, in New York State, Time-Warner, after a long struggle over both technical and regulatory issues, has been able to provide local exchange service to only one apartment building in Rochester, New York. Fewer than 500 subscribers are served.[17] AT&T's efforts to provide local exchange service in Rochester by reselling wholesale local exchange service have not met with even the modest success that Time-Warner has achieved. AT&T's efforts have largely been thwarted by the incumbent local telephone company's pricing policies.[18]

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[16] Federal Communications Commission, Common Carrier Bureau; Common Carrier Competition; Fall 1995. See, also National Association of Regulatory Utility Commissioners, NARUC Report on the Status of Competition in Intrastate Telecommunications; October 4, 1995, for a detailed description of the varied, complex and sometimes limiting schemes for local exchange service competition that are either under consideration or already approved by the individual states.

[17] Conversation with a Vice President, Regulation, Time-Warner Communications, Stamford, CT, January, 1996.

[18] See, "Rochester Tel Settlement Is Blueprint for Local Competition; Potential Competitors Mix Praise With Concerns," Telecommunications Reports (TR), May 23, 1994.

In Michigan, U.S. Signal, after a three year struggle with Ameritech, was finally able to begin offering local exchange services in Grand Rapids, Michigan. At the end of December 1995, U.S. Signal estimated that they had about 7,000 customers, out of a possible 400,000 customers in the area they serve: less than two percent of the potential market.[19]

In Illinois, MCIMetro is certified, but is not offering local service. It appears that MFS is offering some local services to at least some customers. AT&T was recently certified to provide resale services. The much publicized agreement with US Network is for resale rather than facilities competition, and the agreement has not yet been approved.

Cellular telephone service has been identified as a competitive threat to traditional providers of local telephone service. But as discussed in section III.B.1, cellular service is not now, and never was, designed to provide the sort of widespread fixed telephone service that makes up local exchange service; a fact noted even in RBOC expert witness testimony presented to the MFJ Court.[20]

In sum, there is no significant competition in local exchange service in the U.S. today.

Also "Shareowners OK Rochester Tel 'Open Market Plan;' AT&T to Resell Local Services, Seeks Rehearing," TR, December 26, 1994.

[19] Conversation with U.S. Signal Marketing Director, Grand Rapids, Michigan, January, 1996.

[20] U.S. v. Western Electric Company and AT&T, Civil Action 82-0192, Motion of Bell Atlantic Corporation, BellSouth Corporation, NYNEX Corporation and Southwestern Bell Corporation to Vacate the Decree, July 6, 1994 (Four RBOC Motion to Vacate); "Affidavit of Kenneth Arrow and Dennis Carlton," in support of the four RBOCs' motion, p. 16.

When an individual or business moves into an area, or even moves within a given local area, the only relevant choice for telephone service virtually everywhere in the country is the monopoly local telephone company.

2. Exchange Access Service

There is a small amount of actual competition for exchange access services today. Competitive Access Providers (CAPs) have constructed fiber rings in a number of cities, and there is some, albeit a very small amount, of customer-supplied access as well.

a. CAPs

The competitive significance of CAPs has been dramatically overemphasized, particularly by incumbent local telephone companies whose interests are served if they can show that there is "thriving competition" in exchange services. It is important to recognize that the CAPs primarily provide dedicated access. The amount of switched access CAPs provide is minimal, and the numbers show that CAPs, despite the fact they have been around for over 10 years and have displayed consistent growth during the past few years, are still a small factor in the nationwide access business.

The preliminary estimate in Table III.1 shows the current market presence of CAPs to be less than two percent of the total access market.

Table III.1[21]

1995 CAP vs. Local Telephone Company Access Revenues
(all revenue figures are in millions of dollars)

	LEC	CAP	CAP SHARE
Special Access	3,975	297	7.4%
Switched Access	18,376	76	0.4%
Total Access	22,351	373	1.7%

Source: Connecticut Research, estimated 1995 CAP access revenues reported in Telco Competition Report, November 9, 1995, and Federal Communications Commission, Preliminary 1994 Common Carrier Statistics, adjusted to reflect estimated 1995 revenues. End-user revenues were excluded from local telephone company totals.

These small market shares are confirmed by the fact that interexchange carriers report that less than one percent of their access payments go to CAPs.[22] Interexchange carriers also report that access paid for directly by customers is a small amount of the total.

Some have argued that capacity instead of revenues should be used to measure the competitive significance of CAPs. When CAPs install a fiber ring, or rings, in a city, it is common practice to install substantial dark fiber capacity. However, raw capacity is not an adequate measure of market presence. CAPs must have customers to use that capacity. If a

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[21] Common Carrier Statistics for 1995 were not available. Access revenues for local telephone companies have grown consistently since 1993 at approximately four percent per year. To estimate 1995 local telephone company access revenues, 1994 revenues were increased by three percent; three percent was used instead of four percent to be conservative. State access revenues for local telephone companies were distributed to the special and switched access categories in the same proportion as interstate. Elsewhere, Connecticut Research provided data showing 45 percent of CAP special access revenues are for IXC POP-to-POP circuits. This percentage was used to adjust the reported 1995 data. See, "Access Revenue by Application," Connecticut Research Report on Competitive Telecommunications, January 1, 1994, p. 52.

[22] ELB, p. 2.

potential customer is not in a CAP city, is not near a ring in a city that does have a CAP, is in a building that does not permit CAP access,[23] or is too small to justify the fixed expense of connection to the ring, the capacity in the system is worthless as a competitive alternative. Thus, the fact that CAPs have sufficient capacity to serve a much larger portion of the market than they do serve is, by itself, not a meaningful statistic.

b. Privately Supplied Access

Customers have been able to provide their own exchange access since the Above 890 Decision in 1959.[24] However, most customers, even large corporate customers, do not want to be their own telephone company. Increasing competition in interexchange services has led many large customers to abandon their private networks in favor of carrier-supplied virtual networks.[25] The majority of private point-to-point facilities that are still in use are generally used by businesses that have unique security or control requirements, or by utilities or railroads to provide communications along right-of-ways where there simply is no public network available.

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[23] Unlike incumbent local telephone companies, in most jurisdictions CAPs do not have public utility authority to insure their access to right-of-ways and access to customers located in privately owned buildings. Purchase of right-of-ways for the CAPs' fiber rings can run into millions of dollars and incalculable hours of effort, and is a major capital cost for CAPs. Authority to gain access for the CAP's entrance facilities is generally not as costly as a right-of-way, but neither is it very often free. Plus, the resources expended in gaining building access (e.g., marketing personnel, lease/licensing negotiations, and other amenities often demanded by building management) usually far exceeds the actual monthly lease/license payments made to a building owner.

[24] Allocation of Frequencies in the Bands Above 890 Mc; 27 FCC 359 (1959).

[25] Interexchange carrier services have succeeded to the "point where large corporations that still run their own private networks have become an endangered species." Mary Johnston Turner, "Carriers Redefine the WAN Boundary; Wire Area Network;" Business Communications Review, July 1994, p. 35.

As a practical matter, if a customer wants exchange access to an interexchange carrier point of presence, they are likely to rely on the local telephone companies. If they want alternative access; i.e., a non-local telephone company, they are likely to turn to one of the CAPs to provide it for them.

The 1987 "Huber Report," commissioned by the Department of Justice for the MFJ's Triennial Review, pointed out that "about 0.2 percent of AT&T's private line customers elected to arrange their own access to the local AT&T POP, and the majority of those customers used local telephone company facilities to do so.[26] Few would argue that private facilities for exchange access have become a more cost effective substitute for RBOC access services since 1987, and there is no evidence that the competitive significance of customer-supplied private access facilities has grown.

B. Conduct

If competition were truly pervasive in local telephone markets, or were an imminent threat, it would seem reasonable to think that the incumbent local telephone companies would be anxious to both unbundle their networks and to establish interconnection arrangements with the competing access providers. If local telephone companies were really faced with competition, they would face the danger of their local networks being by-passed altogether by competing network providers. In such a scenario, it would be in the best interest of the local telephone company to attempt to sell component parts of the local exchange network in order to 1) insure

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[26] Huber, Peter; The Geodesic Network, 1987 Report on Competition in the Telephone Industry; January 1987, p. 3.26 (Huber Report). The MFJ provided that every three years the DOJ would conduct a review of the MFJ and a report submitted to the court. The Huber Report was the centerpiece of the DOJ's first Triennial Review.

that they at least were able to sell part of a service rather than risk selling none at all; and 2) attempt to meet enough of the competitors's needs for local access services (e.g., transmission facilities and switching services) that it may discourage others from providing similar services. But that is not the case:

> . . .[T]he plain fact is that, in most cases today, LECs have simply refused to unbundle local exchanges, and instead have required competitors to purchase bundled private line service to reach a customer premises. . . . In addition, those bundled loops are often sold at prices higher than the rates the local telephone company charges end-users for the same service, leading to a "price squeeze" that causes competitors to sell service at a loss in order to compete with incumbent LECs.[27]

If competition for access services truly existed, local telephone companies would not be attempting to price loops above retail, they would not even be pricing above cost, because if they did, the competition would step in, price at cost, and capture the local telephone company access market.

With respect to interconnection (traffic exchange), an example of how competitors react to each other in a truly competitive market will serve to illustrate the lack of competition in local telephone markets. There are a number of Internet access providers. Each of those providers offers, without additional charge, complete access to all other Internet access providers' networks. In other words, networks are fully interconnected and they freely exchange traffic between their respective networks. These Internet access providers are not required to provide access to their competitor's networks, but each knows that if it does not provide such access, it

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[27] Chimerine, Lawrence, Robert B. Cohen and Erik R. Olbeter, Ensuring Competition in the Local Exchange, Economic Strategy Institute, Washington, D.C., July 1995, p. 10 (emphasis in original).

will have few, if any, subscribers, because: 1) customers want access to customers on the other networks; and 2) the other Internet access providers offer access to all other networks.

Similarly, if there was really effective competition in local exchange services, local telephone companies would be anxious to provide interconnection to the competition's networks because, like the Internet access providers: 1) their customers would demand it; and 2) if they did not provide access (interconnection), they would lose their customers to the local exchange competitors who did offer interconnection.

The local telephone companies have resisted interconnection with other local exchange providers every step of the way. When the Commission ordered interconnection in the Expanded Interconnection Order,[28]

> . . . LECs filed interconnection tariffs that were often unreasonably high. . . . Southwestern Bell . . . set a tariff of $100,000 for building a 10 foot by 10 foot cage to house a competitor's equipment;"[29]

an amount reportedly more than the cost of an average house in the area.

Once again, if there was competition in the local exchange services market, the local telephone companies would not be employing such tactics. They would instead, like the Internet access providers, be anxiously assuring all of their customers that they had full interconnection with all rival local networks, and be actively ensuring that they indeed did have interconnection arrangements with each of their competitors.

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[28] Expanded Interconnection with Local Telephone Company Facilities, Report and Order and Notice of Proposed Rulemaking (Expanded Interconnection Order), 7 FCC Rcd 7369 (1992).

[29] Ensuring Competition in the Local Exchange, *supra*, note 26, p. 12.

But the RBOCs do not seek interconnection with potential competitors; instead, they have made a practice of consistently taking an adversarial tact with most, if not all, potential local service providers. Issues such as local number portability and local network unbundling have lingered for years in industry task forces, many of which are dominated, or at least heavily influenced, by RBOC representatives.[30] For example, the issue of local network unbundling in the context of Open Network Architecture (ONA), has been before the Information Industry Liaison Committee (IILC)[31] since at least 1991 when, as a result of the Commission deferring unbundling issues to the IILC, the IILC initiated Issue No. 026, "Long Term Unbundling & Network Evolution."[32]

Competitors have experienced the same delays and stonewalling, all in the name of "difficult technical-issues," with respect to local number portability (LNP). LNP has been before the IILC almost as long as network unbundling. The time-honored reason given by RBOCs for not developing specifications for LNP was that it was too technically difficult; originally RBOCs

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[30] See, "Calls Waiting: Rivals Are Hung Up On Baby Bells' Control Over Local Markets;" Wall Street Journal, October 24, 1995, pp. A1 and A6. ". . . [T]he Bells employ an arsenal of tactics to keep competitors at bay."

[31] The IILC was formed by the Exchange Carriers Standards Association (ECSA). The ECSA was established in 1983 by the wireline carriers to deal with technical interconnection standards and other technical issues in the wake of the breakup of the Bell System. Prior to the breakup there had been no real need for such a forum, the industry was, for all practical purposes, controlled by the Bell System and the Bell System essentially established all the standards. In addition to the IILC, ECSA sponsors the T1 Committee, which develops national telecommunications standards, and the Carrier Liaison Committee, which address issues involving interconnection of local telephone companies and IXCs.

[32] Problems with unbundling are described in detail in Hatfield Associates, Inc., ONA: A Promise Not Realized, April 6, 1995.

suggested that it could not be done at all. They maintained that the databases required were simply too large and complex to work effectively. Later, the claim that LNP was "impossible," was replaced with assertions that even if a long term LNP solution could be developed, resolution of the technical issues would require unreasonably, and unacceptably, long lead-times. For example, in local competition hearings held before the Georgia Public Services Commission recently, MCI testified that it believed long term LNP could be developed and implemented within two years; AT&T, in the same proceeding, estimated two or three years. BellSouth, however, held that a long-term solution for LNP would require on the order of six years. Progress is finally being made in Illinois, and the Illinois experience is now being considered by public utility commission sponsored task forces in both Georgia and California.[33]

C. Performance

If local telephone markets were becoming competitive, one would expect to see the results reflected in reduced profits, prices, and firm size.[34] The RBOCs are, with only one exception, earning higher profits today than they were in 1990. With some minor exceptions, the local telephone companies continue to price at, or very close, to the price caps established by

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[33] Conversation with Chairman of Illinois Number Portability Task Force. The Illinois Number Portability Task Force is made up of representatives from nine entities, including the RBOC, cellular providers, potential competitive local exchange access providers and the Illinois Public Service Commission. A long term LNP solution is to be implemented in the Chicago metropolitan area during the first quarter of 1997.

[34] Moody's predicated in 1994 that the effect of competition would reduce telephone company growth to 1.4 percent through 1998 instead of the 2 percent growth experienced from 1989-1993. This prediction is hardly consistent with telephone companies shedding large amounts of market share. "Telephone-Cable Competition Could Be Costly, Moody's Forecasts;" Communications Daily, November 2, 1994, p.2.

regulation, demonstrating that it is regulation and not competition that is limiting their prices. Finally, local telephone company access minutes have grown steadily over the past four years.

Table III.2 compares RBOCs profits in 1990 with profits through the second quarter of 1995. Profits have increased substantially for several of the RBOCs since the allowed rate of return was last set by the Commission in 1990, despite the fact interest rates (a major determinant of their cost of capital) have fallen substantially.[35] If the markets in which they participate were competitive, the benefits of this lower cost of capital would have been passed through to consumers.

Table III.2

RBOC Actual Rates of Return (percent)

	1990	1995
Ameritech	12.8	16.5
Bell Atlantic	11.6	16.5
Bell South	12.0	16.6
NYNEX	10.0	14.7
Pacific Bell	12.0	11.3
Southwestern Bell	10.5	15.3
US West	12.3	13.1

Source: Calculated from FCC ARMIS Report 43-01. Profits for 1995 are through the second quarter stated at an annual rate.

An alternative method of evaluating RBOC performance is to look at pricing under the Commission's Price Cap plan. An analysis of the most recent price cap data shows that most of the RBOCs are pricing at, or very close, to their respective caps. Indeed, in NYNEX territory,

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[35] The interstate rate of return was last prescribed by the Commission in In the Matter of Represcribing the Authorized Rate of Return for Interstate Services of Local Exchange Carriers, CC Docket No. 89-624, Order, 5 FCC Rcd 7507 (1990).

allegedly a hotbed of competition, zone 1 DS1 access rates are less than 1.4 percent and zone 1 DS3 access rates are only 1.0 percent below the regulatory constraint.[36] In other words, despite the growth of CAPs, as discussed previously, and despite the Commission's opening of switched transport to competition, entry has not significantly constrained the prices of the RBOCs. Taken by itself, data showing that the RBOCs have continued to price at, or nearly at, their respective caps might be explained as the result of the Commission coincidentally setting price ceilings at the competitive level. However, as noted above, RBOC profits have been increasing despite generally falling interest rates.

Local telephone company access minutes have grown steadily over the past four years. For example, New York and Illinois are two of the states where local exchange service, as well as exchange access competition is permitted; both states are often cited as states experiencing substantial competition. Nonetheless, in both of these states local telephone companies have experienced strong growth in switched minutes of use. Between the third quarter of 1994 and the third quarter of 1995, total (inter plus intrastate) NYNEX access minutes increased by 9.4 percent. Ameritech access minutes increased by 8.7 percent in this period.[37] This hardly suggests that competitors are having a field day in these states.

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[36] Zone 1 is the portion of a LEC's territory that has the highest usage, and therefore presumably faces the greatest competition. Overall, DS1 and DS3 rates are only 1.2 percent and 1.0 percent below their respective caps.

[37] Calculated from data in Stephanie Comfort and Peter Kennedy, Morgan Stanley, Telecommunications Services Third Quarter Review, November 30, 1995.

Table III.3

Local Telephone Company Access Minutes Growth
(percent change II Qtr 95-III Qtr 95)

	Intrastate	Interstate
Ameritech	11.16	7.68
Bell Atlantic	14.57	6.73
Bell South	13.78	8.50
NYNEX	16.54	8.25
Pacific Bell	21.79	3.46
Southwestern Bell	12.58	10.62
US West	11.35	10.04

Source: Stephanie Comfort and Peter Kennedy, Morgan Stanley, Telecommunications Services Third Quarter Review, November 30, 1995.

Rising volumes and profits show that the local telephone companies are not facing stiff competition in today's environment. The fact that the local telephone companies are, for the most part, pricing their services at the ceilings allowed by regulators shows that they are not particularly afraid of attracting entry in the future. The next Section provides an explanation for the apparent lack of local telephone company concern that high prices will attract competition.

III. CHANGES IN COMPETITIVE TECHNOLOGIES

A substantial portion of ELB was devoted to an analysis of technologies that could potentially be used by competitive providers of local exchange service, and the investments associated with those technologies.[38] The results were then used as inputs to a business case analysis of the competitive provision of local exchange services.[39] As was noted at the outset of

[38] ELB, Chapter 3.

[39] ELB, Chapter 5.

the present paper, HAI is currently quantifying the changes that may have occurred in these analyses as a result of subsequent technology and marketplace developments. In the meantime, however, a number of qualitative considerations that appear to substantiate, and in fact further buttress, the key conclusion reached in the ELB analysis have been identified:

> *The road to significant, ubiquitous local exchange competition will be a long and difficult one with substantial risks to entities which embark on that road.*

This finding in turn leads to the key policy implication stated earlier:

> *It would be entirely premature to 1) establish regulatory principles and practices based on the premise that widespread local exchange competition is occurring or is imminent; or 2) eliminate or lessen the competitive safeguards imposed on the incumbent local telephone companies that are specifically intended to create an environment in which competition can develop as a substitute for regulation of the incumbent local telephone companies.*

This section provides a qualitative analysis of the impact of changes that have ensued since ELB. Section V discusses changes in the business case analysis, building upon this section and the discussion of telephone company costs in Section IV.

A. Brief Summary of ELB Methodology and Findings

ELB considered four potential technologies that might be used by a competitive entity to compete with the local telephone companies in the provision of basic local exchange telephone service:

- Existing analog cellular mobile telephone service;
- Personal Communications Service;

- Telephony over cable television networks, hereafter referred to as cable telephony; and
- Metropolitan area fiber rings; such as those typically associated with Competitive Access Providers (CAPs).

These were analyzed in terms of the generic local exchange network reproduced in Appendix A of this report as Figure ELB-3.1. The mapping of specific technologies to this generic network structure are reproduced as Table ELB-3.1 in the Appendix.

The focus of the analysis in Section 3 of ELB was to determine the per-subscriber investments associated with each generic network component for each of the technologies considered. These turn out to be highly dependent on the geography and demography of the study area in question, and most critically on the assumed level of marketplace penetration attained. As a result, the analysis was done for a nominal case, and several sensitivity analyses were performed. Table ELB-3.2 in the Appendix reproduces the ELB per-subscriber results for each network component of each technology considered; Table ELB-3.3 reproduces the summary of the sensitivity analyses for PCS and cable telephony, showing results for a high-cost and low-cost scenario and for one of the scenarios subsequently utilized in the business case analysis. The nominal case assumed a marketplace penetration of 10 percent, while the business case analysis assumed a penetration rate of 30 percent.

Based on the results reproduced in these various tables, ELB reached the following conclusions about the candidate technologies:

- Existing cellular radio is an unlikely candidate to compete with existing local telephone company telephone service;
- Fiber rings, such as those deployed by CAPs and, often, the local telephone companies themselves, can provide telephone service to large business customers who require a sufficiently high number of lines to justify the high costs of deploying fiber facilities to